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**National Information Centre for Food Science and Technology**

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FOOD DIGEST

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NATIONAL INFORMATION CENTRE FOR FOOD SCIENCE & TECHNOLOGY  
AT  
CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE  
MYSORE 570 013, INDIA





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 \* RAW MATERIALS \*  
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222 New tomato variety

A highly sweet variety of tomato, with many commercial attributes, has been evolved at the Regional Agricultural Research Institute, Gwalior. The variety named after its main attribute as "Sweet 72" is rich in Vitamin C. Its round oval fruits with a slight flattening have an attractive scarlet-red colour. The fruit does not crack and can stand transport well. It is thus well suited for being sent to long distance markets without damage. The average weight of the "Sweet 72" fruit is 75 gm, but it can go upto 150 gm. A welcome feature is its suitability for growing in all the tomato growing regions of the country. The variety starts yielding fruit 75 to 80 days after transplanting and continues till 150 to 180 days. The yield of marketable fruits per hectare is about 200 quintals. Small quantity of seed is said to be available from the Millet Specialist, Regional Agricultural Research Institute, Gwalior. (Data India. 24; 1978; 381)

223 More pineapple per unit area

A spectacular increase in pineapple yield is possible, if ratooning is combined with close planting, according to the Indian Institute of Horticultural Research, Bangalore. In the experiments, a planting density of 55,555 plants per hectare was followed. An yield of 66.39 tonnes of pineapple was obtained from 1 hectare in about 20 months after planting the crop. Thereafter, two ratoon crops giving 33.65 and 35.14 tonnes of fruits were harvested at the intervals of 12 months.

This works out to an yield of 135.78 tonnes per hectare in 44 months. With traditional spacing, it would roughly take 180 more months to get this yield. Ratooning for two crops did not affect the quality, market appeal, fruit size or suitability for canning. Ratooning beyond two crops, however, is not profitable. (Agriculture & Agro-Industries Journal. 10(12); 1977; 36)



224 Red oil palm cultivation to be extended

The Centre has drawn up a Rs.200-million scheme to extend the cultivation of red oil palm over 30,000 more hectares during the next five years. Another Rs.200-million will be spent on setting up extraction and processing facilities. The scheme is expected to go a long way in meeting the shortage of edible oils. Funds for the project will come largely from a consortium of public sector banks under the leadership of the Agricultural Finance Corporation. (Data India. 17; 1978; 259)

225 Break-through in Chicory seed production

Indian coffee with complete Indian flavour would now be available with the break-through achieved in the development and multiplication of suitable chicory seed variety in Himachal Pradesh in collaboration with the State Government, Himachal Pradesh Agricultural University and the National Seeds Corporation (NSC). Chicory seed is used for improving the coffee flavour. So far chicory seed worth Rs.10 million was imported every year.

The National Seeds Corporation had already gone ahead with its production. This programme is planned to be expanded quickly by the NSC in order to meet the full demand of coffee growers and processors in India. (Economic & Commercial News. 8(25); 1978; 11)

226 Low-cholesterol egg

An approach to lower the egg cholesterol level was made at the Haryana Agriculture University, Hissar, by feeding certain cholesterol reducing substances to laying hens. Garlic powder (Allium sativum), Sarpagandha powder (Raufofia serpentina) and nicotinic acid were fed to laying hens. Eggs obtained from these hens before feeding the compounds, during the feeding period and after withdrawal period (each of three weeks duration) were analysed for egg cholesterol.

It was concluded that garlic powder can be fed to laying hens for producing low cholesterol eggs without having any



adverse effect on egg production and other traits. (Science Reporter. 15(7); 1978; 480-1)

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\* STORAGE \*  
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227 Weight loss in (kharif) Paddy by store type (1975) -  
Study done in 18 Villages of Andhra Pradesh during 1974-76

Storage structure	Number of structures sampled	Weight loss %	Weighted loss
Indoor gade	61	6.23	2.286
Outdoor gade	28	4.53	0.761
Puri	12	3.65	0.262
Patera	19	3.39	0.386
Mudpots	8	4.16	0.199
Indoor puri	5	4.55	0.136
Moola	5	6.08	0.182
Kotlu	4	2.68	0.064
Garise	5	3.65	0.109
Bags	19	3.82	0.435
Total	166		4.82%

Weight losses in different store type before and after improvement

Causes	Indoor 'gade'		Outdoor 'gade'		Metal bin	
	Tradi- tional	Improved	Tradi- tional	Improved	Un- treated	Fumi- gated
Insects	2.26	0.80 (64.61)	1.74	0.59 (66.09)	1.43	0.38 (73.43)
Others	3.97	0.53 (86.65)	2.79	0.40 (85.67)	0.73	0.24 (66.13)
Total	6.23	1.33 (78.99)	4.53	0.99 (78.15)	2.16	0.62 (71.30)

Note Figures in brackets indicate the percentage reduction in weight loss due to improved practices.

(The Economic Times. 18(33), 1978; 8, 5)



228 Artificial coffee flavours

Artificial coffee aroma G2141 has been successfully tested for candies, beverages, ice cream, desserts and wherever a top aroma of coffee is necessary. This is a highly concentrated oil and has to be used with care and discretion. The recommended usage is approximately 1/100 of 1 per cent. This is only for a top aroma and flavour enhancer and is not to be used alone.

Other flavours are natural and artificial coffee extract G1750 and artificial coffee extract G1230. (Food Trade Review. 47(12); 1978; 740)

229 Concentrated terpeneless oils

A new series of highly concentrated terpeneless oils in peppermint, bergamot, orange lemon and lime are available. The oils are produced by column chromatography, a process which confers specific product advantages compared with conventional production techniques.

During column chromatography, oils are subject to a maximum temperature of only 25°C, so that the full fresh bouquet of the natural oils is retained in purest form. The new series of terpeneless oils is especially recommended for use in end products requiring a long shelf life.

The oils have specific application as "top notes" for soft drinks, fruit concentrates and carbonates, in the sugar confectionery industry and as low dosage flavour boosters in the production of dairy desserts, yoghurt and ice cream. (Food Processing Industry. 47(555); 1978; 51)

230 Sodium protolac

This is the sodium salt of substantially undenatured lactalbumin - phosphate complex, a free flowing stable powder. As an egg replacer/stabilizer, it can replace all or part of



the liquid or dried whole egg, or egg white, used in bakery. Its use can lead to more moist fresh tasting product with a high texture rating. It can also be used as a milk solids replacer and also in custards. In comminuted meat products it acts as a stabilizer and water binding agent. (Food Trade Review. 48(1); 1978; 25)

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\* PROCESSES \*  
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231 Corn syrup - a new method for production

The National Sugar Institute, Kanpur has developed a new technique for producing a sweetening agent from corn or any other starchy material employing chemical treatment. The new product, high fructose corn syrup, will help augment the production of crystal sugar. This will be different from high fructose corn syrup produced through enzymatic reaction in America and Japan. The high fructose corn syrup is a good substitute for sugar in liquid form for industrial purposes like manufacture of soft drinks, confectionery, jams, jellies, and carbonated beverages. (Chemical Digest. 9(7); 1978; 1, 3)

232 Low cost process removes color from sugar liquor

Melted raw sugar is heated to 80°C and treated with dimethyl dialkyl ammonium chloride. Phosphoric acid is then added followed by neutralization to pH 7.0 with lime. Aeration of this liquor and addition of a polyacrylamide flocculant follows before entry into a special clarifier. Clarified liquor is drawn from the bottom of the clarifier before directing it to a secondary decolorization process, filters or the vacuum pans for boiling. (Food Engineering International. 3(2); 1978; 31)

233 A process for dehydrated salted fish-soy cakes

A method for producing a dehydrated, salted fish-soy product was developed. The mechanically deboned flounder meat from headed and gutted fish frames ('racks') was thoroughly mixed with salt (30% of the meat wt.), soybean curd (20% of the meat wt.) and the mixture was subjected to a pressure of 75 lb/in<sup>2</sup> to remove juices and form cohesive cakes. The cakes were dried at 50°C for 8 hr. The final product contained 49.8% crude protein, 14.4% moisture, 21.1% salt and 5.3% crude fat. The salt was removed from the product by bringing the fish-soy cake to boil in 3 changes of water. Such a product can be made economically with the use of simple equipment and therefore could serve as an inexpensive protein for the developing countries. Further development work and appropriate acceptance trials with a given target population seem desirable. (Journal of Food Science. 42(3); 1977; 765-7)

234 Preservation of peeled potatoes

Peeled potatoes keep six weeks when packed by a Swedish system involving passage of the peeled and pared potatoes through a succession of water baths containing salt and ascorbic acid, shrink wrapping and the introduction of pure nitrogen gas just prior to sealing. The new plant has a capacity of 10,000 tonnes per year. Potatoes prepared by the previous system would remain in fresh condition for only a week. (Newsletter, Food, Nutrition & Health. 1(9); 1977; 1)

235 Quick cooking by alternating current

A Swedish firm has devised a new way of cooking potatoes that cuts cooking time by half. Dubbed oscillating cooking (OSCO), the new technique uses alternating current and reduces energy consumption by 20-30%. The potatoes are immersed in water inside a specially designed cooker fitted with two alternating current electrodes and are taken out after 8 minutes fully cooked. (Invention Intelligence. 13(4); 1978; 131)



## 236 Ginger oil extraction process

In this process the steam generated by the steam boiler passes through a perforated pipe fixed at the bottom of the still. The ground, ginger should be spread uniformly on a grid fixed a few inches above the water level. Once the still is covered with the lid, steam passes through ginger and carries with it the volatile oil through the condenser. As it passes through water, it gets cooled, liquifies and pours into the bottle placed below. The water content in the bottle is drained off by inserting a tube and the supernatant oil is left in the container. A set of equipment for distillation of ginger volatile oil is illustrated. (Documentation Bulletin, Vaikunthbhai Mehta Smarak Trust, Bombay. No.31; 1978; 31)

## 237 Soft raisins for breakfast foods

A new heat treatment has been developed for raisins which are added to breakfast cereals. This treatment immediately gives a softer texture and keeps them softer during storage than untreated raisins would be. The USDA at Albany, Calif, USA, developed this treatment, following industry complaints that raisins become hard and chewy when added to breakfast cereals. This treatment also inhibits sugar crystals from forming during storage.

Researchers found that the best way of heating the raisins was in a conventional oven for 48 hr at about 120°F (49°C). This processing slightly darkens the raisins, but gives them a moist texture and appearance. Even when stored for 10 months at 72°F (22°C) there were no visible crystals on the surface of the raisins. Treatment in a microwave oven proved unsatisfactory, because the heating time was too short to allow the sugar seed crystals to dissolve and be dispersed within the raisins.

Researchers also tested coating the raisins with sugars, flours and starches to reduce moisture loss, but none of these proved effective. One coating that significantly reduced moisture loss during storage was protein, either from egg albumen

or solubilised soya. This coating has the additional advantage of increasing the protein content of the fruit. (Food Trade Review. 47(12); 1978; 740)

238 Process for Sodium stearoyl-2-Lactylate

The Regional Research Laboratory, Hyderabad has developed a simple "One-pot" procedure for the preparation of SSL. The product conforms to the specifications of Federal Drug Administration of the USA, and compares well with another product made in USA ("Emplex" of Patco Products, Kansas City, USA) in baking performance of soy flour-fortified bread. (Journal of Food Science & Technology. 15(1); 1978; 28-30)

239 Process for Nisin production

The National Dairy Research Institute (NDRI) has succeeded in producing 'Nisin', an antibiotic obtained from bacteria commonly found in milk, curd, cheese and many other fermented milk products and used as a preservative of food products. NDRI has isolated Nisin-producing strains of the bacterium Streptococcus lactis, from milk and milk products and has standardised the conditions for optimal production of this antibiotic. (Data India. 25; 1978; 388)

240 Ethephon manufacturing process

Ethephon is an important plant growth regulator. By its application, rubber latex yields can be increased by 200-300%. It can change the female-male flower ratio in many plants. It is also used for maturing and ripening fruits in many plants. It is reported to increase the yield of certain cereals. So far such growth regulators were imported and then formulated in India.

National Chemical Laboratory (NCL), Poona, has developed a process for the manufacture of ethephon. The following steps are involved: (i) preparation of 2-chloro-ethyl phosphate from phosphorus trichloride and ethylene oxide; (ii) isomerization of 2-chloroethyl phosphite to diester of phosphonic acid; and



(iii) the diester of phosphonic acid is de-esterified to dry hydrochloric acid gas to yield ethephon.

Phosphorus chloride, ethylene oxide, hydrochloric acid, and sulphuric acid are the main raw materials required for manufacture of ethephon. All are indigenously available. The equipments required are: distillation condensers, bubblers, stirrers, heating mantles and chilling units. All of these are also indigenously available. (Industrial News Digest. 1(8); 1978; 24-5)

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\* BYPRODUCTS AND WASTE \*  
\* UTILIZATION \*  
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241 Broth from shrimp waste

The broth from shrimp waste was prepared by filtering the minced and water blended shrimp waste followed by acidification, and adding of spices and preservatives in specified quantities. The product kept well for 161 days at room temperature. This concentrated shrimp flavour can be added in small quantities to soup or vegetable curries. (Seafood Export Journal. 10(5); 1978; 23-4)

242 Spun protein from meat waste

The protein from meat waste can be spun in much the same manner as it is spun from plant protein. The technique of spinning has been applied successfully by researchers to proteins derived from animal offals. The proteins were extracted from the offal by alkaline treatment, followed by precipitation of the solubilized proteins at pH 4.5 to yield a paste-like protein isolate. Before spinning, the protein isolate is treated with concentrated sodium hydroxyde to yield a viscous solution or "dope". This is then extended into a coagulation bath containing acid and salt to form fibers by the same method used for texturing plant protein. The blood

plasma can also be treated the same way. However, since these proteins are already in solution, the isolation step is replaced by a concentration step. The control of viscosity of the spinning solution is critical for formation of the fiber. (The Compound Livestock Feeds Manufacturers' Association of India. 1(2); 1978; 7)

243 Food processing plant wastes: The economics of recovery

Before developing products from vegetable processing plant wastes, thorough economic analyses are recommended. Even though the wastes are free, the processes for transforming those wastes into useable form can be costly both for the equipment and the energy to accomplish that transformation. At Ore-Ida Foods plant a study revealed that converting scrap potato to molasses would raise the value of those wastes by a factor of seven; converting to alcohol would increase the value by a factor of thirteen. However, both options were rejected in favor of simpler sugar production and starch recovery because of a smaller capital investment and a more stable market. (Agricultural Engineering. 58(12); 1977; 5)

244 Protein from waste treatment plant

Effluent from confectionery manufacture can be treated to produce protein that can be used in compound feed-stuffs. The effluent, which contains a high proportion of carbohydrates, is treated with a yeast culture to produce single cell protein.

The process comprises a balancing tank to receive flows discharged from the factory, followed by nutrient addition, pasteurization, or sterilization as required, prior to injection into a selected culture fermentation process under controlled pH and temperature conditions. The culture converts the soluble substrate, reducing the chemical oxygen demand (COD) of the effluent and making it soluble for discharge. The single cell protein is recovered from the effluent and dried. (Milling Feed and Fertilizer. 161(4); 1978; 48)



245 Gums in rapeseed have no depressing effect

The presence of gums in rapeseed meal are a by-product of the refining rapeseed oil and their addition back to the rapeseed meal does not show depressing effect on poultry. This claim was based on results from Guelph tests in which rapeseed meal or soyabean meal with and without rapeseed gums were included in diets for broilers and layers. There were only small differences in the performance of any of the test groups, and none were attributable to the presence of gums.

However, the presence of 15 per cent rapeseed meal in the ration of layers caused a slight reduction in feed intake and in egg size. Rapeseed meal at a level of 20 per cent in the broiler rations tended to cause a reduction in weight gain and an increase in food conversion ratio. (Milling Feed & Fertilizer. 161(4); 1978; 44)

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*   PROCESSED PRODUCTS               *
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246 Yoghurt as full meal

The variant of this nutritious, fermented milk product has come on the market - a yoghurt with flaked cereals as flavour. It combines yoghurt with a product well-known the world over "Birchermuesli", a Swiss speciality essentially composed of wheat, millet and barley flakes as well as nuts, almonds and dried fruits. The ready-made health food is popular as an instant meal for breakfast, lunch or even dinner. All it needs is milk, cream or yoghurt and, depending on taste, fresh fruit and a sweetener. (Food Engineering International. 3(2); 1978; 43)

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*   EQUIPMENT MACHINERY &          *
*   PACKAGING                     *
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247 Cup and cone mechanical paddy dryer

The new mechanical dryer is fabricated out of mild-

steel rods and wire-mesh, formed into the shape of cups and cones that are placed one above the other. The paddy simply slides on top of a cone and then flows down into the cup below, which feeds the next cone. These cups and cones are supported on three mild-steel joists or columns. A central tube with perforations is inserted into the dryer, which serves to distribute hot air to the flowing mass of grain. As the paddy tumbles down, it gets thoroughly mixed besides being exposed to hot air. This ensures uniform and quick drying. There are no moving parts in this design, as against the Western designs.

248 Portable grain cleaner

The International Rice Research Institute has developed and released for commercial manufacture a simple, small oscillating grain cleaner with a capacity of one tonne per hour. It comprises a body fabricated from 12-mm thick plywood attached to a light-gauge angle iron frame and legs. An integral eccentric drive and blower arrangement provide for both screen oscillation and air discharge which permit excellent grain cleaning.

The cleaner is equipped with an electric motor, but its cost is comparable with that of some hand-operated winnowers. An added feature is a screen for separating large impurities from the grain. (UNIDO Newsletter. No.117; 1978; 5)

249 Continuous tea sorting machine

Trinick sorter is a continuous tea sorting machine. It is provided with stainless steel wire meshes to give even sorting. Usually the machine is supplied with 30, 24, 16, 12 and 10 mesh sizes. (Industrial Products Finder. 6(11); 1978; 17)

250 Ultraviolet light used in color sorting of peanut

ICORE has developed the Model 5141 - Ultraviolet Color Sorter which has been designed to reject faulty pieces by photoelectronic techniques. The 5141-UV feeds a stream of product onto a pair of contre-rotating rollers which line up the material to be sorted. The stream passes through the



inspection head in free fall, where it is illuminated by ultraviolet light. The electronic eyes inspect each particle on all sides, and chips, broken nuts, and nuts with wormcuts are rejected by an air jet. (Peanut Journal & Nut World. 57(5); 1978; 6)

251 Vacuum peeler

A unit is designed to peel items, such as tomatoes, utilising the simple principle of using a vacuum so that water can be flashed into steam at a lower temperature. Tomatoes fall into a scalding tank of hot water, are transferred from this to a series of buckets on a conveyor that steadily moves forward, until it reaches vacuum head which descends, pulls a vacuum on three buckets at once, so that the moisture under the skin of the tomatoes flashes into the steam and loosens the skins. The vacuum head moves the conveyor for a short distance, then retracts and lines up with the next three buckets and moves forward with them. Meanwhile, the buckets of treated tomatoes move to the end of the conveyor for final skin removal.

The next unit consists of rotating rollers designed to pull the loosened skin off the tomatoes and effectively separate them cleanly from the product. Using this system, a similar effect to a steam peeler can be achieved, but at a much lower temperature and, over the years there have been a long series of problems surrounding temperatures in steam peelers. The unit is presently available in two sizes with a capacity of 6000 kg or 12,000 kg per hr. (Food Trade Review. 47(12); 1977; 736)

252 Gentle peeling machine for tomatoes

Designed for peeling oval-shaped tomatoes such as San Marzano, Roma and similar varieties, the peeling machine is easy to handle and simple to maintain. No steam, water jets or chemicals are needed for peeling. That ensures full recovery of all residues and practically no product loss. Moreover, the process meets environmental control regulations and is

inexpensive to operate. Sanitary considerations are also fully met since all parts in contact with the product are made of stainless steel, special nylon and sanitary rubber. Once the tomatoes are selected, they are fed into a water tank for washing. A feeding elevator takes the fruits from the tanks, aligns them and deposits them in V-shaped, rubber-lined articulated channels.

Transferred to the actual peeling machine, the aligned tomatoes are incised longitudinally over their whole length by a circular, rotating cutter. As they pass along, the channel narrows and the peel is pulled off gently without loss of flesh and pectin.

Two-, four- and six-channel peeling machines are available having an installed power of 1.47 to 2.9 kW (2 to 4 hp). Nominal capacity is 2.5 t/h for the smallest, 7.5 t/h for the medium sized, and 12 t/h for the largest model. (Food Engineering International. 3(2); 1978; 45)

#### 253 Vertical grinding mill

The vertical grinding mill is suitable for grinding any kind of grain in factory and office canteens or restaurants. The machine has dust-proof ball bearings and a device to regulate fineness of grinding. Offered in three sizes, its output range extends from 30 to 200 kg/hour. The machine uses emery stones. Also available are horizontal flour mills, hullers, masala powdering machines, and Marshall (Bombay) type grinding flour mills. (Industrial Products Finder. 6(11); 1978; 39)

#### 254 Massive dairy cold storage programme

The number of dairy plants in existence in the public as well as cooperative sector, to date is 186 comprising 92 liquid milk plants, 26 milk product factories and 68 pilot milk schemes. Besides, 52 dairy projects are under implementation. All these plants except pilot milk schemes have one or more cold stores forming a nucleus as essential and important part of the dairy. Each of these dairies are in turn, linked



with large number of chilling centres in rural production centres where milk is chilled and kept at low temperature before it is being sent to main dairies. (Economic and Commercial News. 8(29); 1978; 11)

255 Instantaneous cooling of bakery products

The modulated vacuum coolers in Europe have shown that cooling times can be reduced from hours to minutes. Vienna bread formerly requiring one hour to cool is now being cooled in  $1\frac{1}{2}$  minutes; sponge cake previously on a one hour cooling cycle is now cooled in 1 minute; and fruited slab cakes formerly taking 9 hours to be cooled are now cooled in only 4 minutes.

The modulated vacuum cooler is available as an in-line unit for continuous production, or as a rack unit for batch operations. With the rack type unit, a free standing vacuum chamber is served by a remotely mounted vacuum pump. To allow effective door sealing, the rack of goods to be processed is lifted into position by a hydraulically actuated platform, to allow the operator to easily push the rack into position. (Food Engineering International. 3(2); 1978; 33)

256 A fully automatic, versatile dust monitoring system

A dust monitoring device, originally developed by the Central Electricity Research Laboratories of Britain, is being manufactured by George Kent Electronic Products Limited, of Cambridge. It provides an accurate record of grit and smuts emitted from industrial plants. Because it registers all dust particles of 10-micron size or larger; it is also being used in the food and pharmaceutical industries in order to prevent the loss of valuable powders into the atmosphere. (Technologist's Digest. February 1978; 37)

257 Temperature monitor for steel silos

A new design of electronic monitors for tracking temperature changes in grain silos and other grain and crop stores is the latest development of RDS Agriculture Ltd. Their crop

Store Monitor is used to monitor the progress of crop cooling operations; to detect temperature differentials in grain silos; and to help detect crop deterioration during the storage period.

The unit has a sensor "loom" to suit most sizes of steel silos upto 40 ft high and 40 ft in diameter, consisting of four sensors placed down the centre of the bin and four orbital sensors which are placed about 4 ft in from the perimeter and 4 ft down into the grains.

The battery-operated, monitoring unit can be located at any distance from the silo and the temperature information is presented on nine scales, one for each thermistor in the silo and one for a thermistor led to an outside position where it can sense ambient temperature. The consol can be adapted to other types of grain store. The price of the kit is £375 per silo. (Milling Feed and Fertilizer. 160(10); 1977; 44)

258 Digital temperature indicator

Jivan temperature indicator is said to have high accuracy and resolution of upto 0.1°C. It comes complete with easily readable 12-mm LED display. The indicator has been specially designed for Pt 100 and Pt 200 types of sensors. It can be operated on AC or battery supply. Multi-channel facility can also be provided. Other products available include time totalizers/event counters, as well as time and frequency counters. (Newsletter of Protein Foods & Nutrition Development Association of India. No.55; 1978; 4)

259 Water filter

Micron-100 water filter has a capacity to soften 1,000 litres of hard water at 100 litres/hour using just 10 paise worth of common salt. It reportedly softens well and bore-well water effortlessly and requires only a 1.5-V torch cell that operates the indicator for a year. (Industrial Products Finder. 6(11); 1978; 5)



260 Inspects packs by X-ray

An automatic X-ray package scanner, the Borden type 1000, detects particles of glass, metal, stone and ceramics in bottled or packaged food products. This self-contained instrument momentarily illuminates each pack with low power X-radiation which is analysed by a signal processor that recognises the presence of undesirable objects and initiates the rejection of contaminated packs.

The radiation shielding cabinet is watertight and the instrument is designed for production line installation; it will inspect upto 8 packages/sec or handle a maximum conveyor speed of 120 ft/min. (Food Manufacture. 53(2); 1978; 77)

261 Maintain snacks crisp and fresh

The new Brite Keepfresh containers close in a unique way to keep snacks crisp and food fresh for days. These containers are distinctively different from other plastic containers. They are specially designed to create vacuum when closed. This locks out moisture and staleness and locks in flavour and freshness. Also available is a jug which is not to be used merely as a jug, but as a cocktail or a milk shaker because its lid fits like a seal. The containers help to maintain freshness of juices and other drinks which tend to turn sour if stored otherwise. (Industrial Products Finder. 6(7); 1978; 39)

262 Pilfer-proof caps manufacturing plant

Mono-Pack manufacture and supply complete plants for making pilfer-proof caps and other bottle-closures, including printing equipment. Their service includes supplying complete know-how, project reports, costing details and in-plant training facilities to technicians. A unit for manufacturing pilfer-proof caps comprises special-purpose punching machines, beading machines, shearing machines and cap sealing machines for testing caps under production. It is reported that the machines offered can complete most standard pilfer-proof caps in two operations. The cap blank of a particular size is drawn in one operation on

the punching machine by fitting a multiple die for that size.  
The beading machine fitted with the required size of combination tool set, finishes the cap in one operation giving its final shape after knurling, greaving and perforation operations.  
(Industrial Products Finder. 6(11); 1978; 8)

263 Laminated pouches

Adathakkar pouches (sachets) are made from paper/foil/poly, foil/paper/foil/HSL laminates. They are for packaging powders and granules in pharmaceutical, food and chemical industries. The pouches are said to be moisture-proof, light-weight and multi colour printable. (Industrial Products Finder. 6(11); 1978; 51)

264 Hand operated volumetric filter

Model AP, a hand-operated Filamatic volumetric filling machine is designed for short-run production filling of free-flowing or viscous liquids. The Model AP filler can be used on any convenient bench top. It is easy to operate, even for ~~inexper~~ inexperienced personnel. Simply pour the product to be dispensed into the supply hopper, and set the volume adjustment for the amount of fill desired. Pump the handle up and down one time, to dispense from 28.35 g to 453.59 g. The device fills aqueous solutions, solvents, creams, cakebatter, adhesives, inks, insecticides, shampoos, paint and any other flowable liquid or semi-liquid. All metal parts wetted by the product are fabricated from stainless steel. Equipped with a 37.85 litre supply hopper, the model measures 53.34 cm x 48.26 cm, and the net weight is 29.48 kg. (Industrial Products Finder. 6(9); 1978; 72)

265 Giant-size plastic container

A giant-size plastic container has inside dimensions of 44 x 44 x 23 in. and a capacity of 1,000 lbs. The container is especially suited for the handling and transporting of bulk food products, such as fruits and vegetables from the field all the way through storage and processing.



The container is molded of high density polyethylene structural foam, FDA approved for food handling applications. Its rugged construction protects fragile contents from damage and provides long service life. The container resists fruit and vegetable acids, as well as liquids or moisture. It can be steam cleaned and will not splinter. (Food Engineering International. 3(2); 1978; 58)

266 Stencil roller marks on non-porous surfaces

Stencil roller makes a clear, sharp mark on plastic, metal, glass and any other non-porous surface. Unit has a 4-oz squeezable plastic container which also serves as a handle. The high viscosity ink in the container is controlled through a valve for proper saturation of the roller with no mess. (Food Engineering International. 3(2); 1978; 57)

267 Industrial gums and paper adhesives

VIA offer a range of industrial gums and adhesives for book binding, labelling and packaging industries. There are extra strong synthetic adhesives for special applications such as paper tubes, as well as containers and paper jackets on dry cells. (Industrial Products Finder. 6(10); 1978; 49)

268 Automatic labelling machine

High-speed automatic vertical labelling machine for vials and bottles with over-printing attachment for coding numbers is now manufactured in Gujarat. Expiry date and lot number can be labelled from 16 mm to 70 mm diameter. Width of the label can be from 15 mm to 90 mm. Length of the label varies from 20 mm to 135 mm. Speed is 50 to 150 units per minute depending upon the size of the label and object to be labelled. (Industrial Products Finder. 6(9)/ 1978; 21)

269 Marking and printing machine

Ace power-driven marking and printing machine is fitted with an automatic inking unit containing a number of rollers and

an oscillating roller to ensure fine distribution of ink. Rollers are held in cradle for ease of cleaning and changing of colour. This unit transfers ink to the printing drum, the ink flow being adjustable. Types or blocks are automatically inked on each cycle of the machine by rollers which transfer ink to the drum. Positive metal types or blocks are used so that negative impression is deposited on the flat adjustable printing pad. The article to be printed is either rolled over or pressed down on the pad. A clear print is thus transferred to the article. This offset (transfer) method together with the use of a sliding pad enables articles of different shapes and sizes including bulky and irregularly shaped objects to be printed without any adjustment to the machine. Glass, plastics, or metals can be printed on. These machines are fitted with a foot-operated control switch. This facilitates instant stopping and leaves the operator's hands free. (Newsletter of Protein Foods & Nutrition Development Association of India. No.55; 1978; 1)

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270 Summary of the All India Final Estimates of Crops - 1976-77

Crop	Area (Thousand hectares)	Production (Thousand tonnes)
I. FOODGRAINS		
Rice	38,605.6	42,787.5
Jowar	15,778.5	10,396.0
Bajra	10,729.6	5,728.1
Maize	6,054.0	6,256.6
Ragi	2,531.0	2,178.0
Small Millets	4,431.2	1,637.0
Wheat	20,863.3	29,082.1
Barley	2,217.5	2,295.6
TOTAL CEREALS	1,01,210.7	1,00,361.4

contd..)



Gram	7,855.9	5,366.4
Tur	2,534.3	1,646.2
Other Kharif Pulses	7,473.6	2,137.0
Other Rabi Pulses	4,981.9	2,058.5
<b>TOTAL PULSES</b>	<b>22,845.7</b>	<b>11,208.1</b>
<b>TOTAL FOODGRAINS</b>	<b>1,24,056.4</b>	<b>1,11,569.5</b>
<b>II. OILSEEDS</b>		
Groundnut (Nuts in shell)	6,947.6	5,262.4
Castorseed	487.2	172.2
Sesamum	2,165.1	403.9
Rapeseed & Mustard	3,144.5	1,561.8
Linseed	1,924.5	430.7
<b>TOTAL FIVE MAJOR OILSEEDS</b>	<b>14,668.9</b>	<b>7,831.0</b>
Nigerseed	551.6	110.0
Safflower	668.2	217.0
Cottonseed*	6,901.0	1,967.8
<b>III. CONDIMENTS AND SPICES</b>		
Turmeric	67.5	121.1
Cardamom	99.0	4.7
Coriander	230.9	105.1
<b>IV. OTHER CROPS</b>		
Sugarcane (Gur) $\phi$	2,872.4	15,836.6
Guarseed (seed purpose only)	2,811.8	1,113.4

\*Area same as for cotton (Lint)

$\phi$ Production in terms of cane was 1,54,023.1 thousand tonnes for 1976-77

[State-wise figures are also available for oilseeds]

(Agricultural Situation in India. 32(7); 1977; 469-70)

## 271 Nearly half of world grain used as feed

Global utilization of grain by livestock is currently approximately 450 million tonnes annual, reports USDA. This is nearly one half of the world's yearly production and, if seed use and waste loss are excluded, represents well over half of total world grain consumption. (Milling Feed & Fertilizer. 161(1); 1978; 3)

272 Area and production of tur (Cajanus cajan) in different states of India during 1975-76\*

State	Area (hectares)	Production (tonnes)
Andhra Pradesh	2,15,900	43,800
Assam	5,380	3,753
Bihar	1,02,192	71,997
Gujarat	1,01,900	47,500
Haryana	2,715	1,551
Himachal Pradesh	383	184
Madhya Pradesh	5,33,800	4,41,800
Maharashtra	6,58,400	4,39,800
Meghalaya	106	106
Orissa	57,641	28,370
Punjab	5,700	2,800
Rajasthan	47,971	24,596
Tamil Nadu	97,750	38,490
Tripura	408	175
Uttar Pradesh	5,13,100	7,41,326
West Bengal	33,200	28,600
Dadar & Nagar Haveli	1,566	626

\*Districtwise figures are also available  
(Agricultural Situation in India. 32(7); 1977; 39-42)



273 Area and production of Banana in different States of India during 1974-75\*

State	Area (hectares)	Production (tonnes)
Andhra Pradesh	15,800	1,60,700
Assam	18,430	2,40,551
Bihar	8,253	37,529
Gujarat	13,189	1,83,926
Karnataka	16,105	82,500
Kerala	47,143	3,56,583
Madhya Pradesh	3,437	52,244
Maharashtra	33,800	8,89,500
Manipur	1,700	22,300
Meghalaya	3,000	54,632
Orissa	15,014	1,09,625
Tamil Nadu	44,330	9,72,281
Tripura	2,623	15,890
Uttar Pradesh	592	13,191
Andaman & Nicobar Islands	493	2,859
Mizoram	650	5,194

\*District-wise figures are also available  
(Agricultural Situation in India. 32(7); 1977; 433-5)

274 India to sell tomato paste to Bulgaria

India has contracted to sell to Bulgaria 3,000 tonnes of tomato paste annually from the agro-industrial complex that the latter country is helping India to set up in Karnataka. (Data India. 23; 1978; 357)

275 Area and production of Potato in different States of India during 1975-76\*

State	Area (hectares)	Production (tonnes)
Andhra	367	602
Assam	28,250	1,68,015
Bihar	1,42,456	14,14,117
Gujarat	5,600	1,05,200
Haryana	10,300	2,07,100
Himachal Pradesh	14,958	77,185
Jammu & Kashmir	2,077	6,773
Karnataka	11,247	1,02,168
Madhya Pradesh	20,756	2,31,666
Maharashtra	13,429	59,118
Manipur	2,350	8,700
Meghalaya	17,920	70,000
Nagaland	3,597	14,388
Orissa	6,975	60,100
Punjab	27,400	4,59,400
Rajasthan	2,338	5,203
Tamil Nadu	12,300	1,60,480
Tripura	2,756	29,160
Uttar Pradesh	2,00,288	26,38,413
West Bengal	1,12,800	16,15,500
Delhi	309	2,346
Mizoram	179	1,196

\*District-wise figures are also available

(Agricultural Situation in India. 32(7); 1977; 442-6)



276 Exports of Spices from India during 1977-78

Commodities	Quantity (M. Tons)	Value ('000 Rs.)
Pepper	25,249.93	5,00,531.61
Cardamom small	2,763.34	4,84,362.80
Cardamom big	62.45	1,121.56
Chillies	4,610.92	40,153.79
Ginger	9,464.50	1,36,443.77
Turmeric	9,319.15	71,892.29
Curry powder	1,720.59	18,091.78
Coriander seed	9,378.43	64,042.73
Cumin seed	239.17	4,733.44
Celery seed	2,597.32	22,103.86
Fennel seed	927.12	5,723.06
Fenugreek seed	2,605.10	9,151.44
Garlic	2,464.06	8,852.52
Aniseed	-	-
Cassia	290.75	1,679.91
Mace	-	-
Tejpet	246.68	360.97
Nutmeg	7.46	36.20
Misc. Spices	1,511.46	9,284.77
Oils of spices	7.67	3,002.91
Oleoresins of spices	131.10	19,213.94
TOTAL:	73,597.40	14,00,783.35

(Spices Newsletter. 12(5); 1978; 4)

277 Area and production of Black Pepper in different states during 1976-77\*

State	Area (hectares)	Production (tonnes)
Karnataka	3,353	930
Kerala	1,10,580	30,600
Tamil Nadu	240	40
Pondicherry	11	6

\*District-wise figures are also available  
(Agricultural Situation in India. 32(9); 1977; 586)

278 Area and production of Garlic during 1975-76\*

State	Area (hectares)	Production (tonnes)
Andhra Pradesh	726	1,536
Bihar	2,524	2,216
Gujarat	8,176	43,312
Haryana	510	6,496
Jammu & Kashmir	188	227
Karnataka	2,983	3,210
Madhya Pradesh	5,719	20,557
Maharashtra	3,800	32,000
Orissa	8,237	17,246
Punjab	373	2,553
Rajasthan	1,717	3,403
Tamil Nadu	750	3,430
Uttar Pradesh	1,412	4,366

\*District-wise figures are also available  
(Agricultural Situation in India. 32(9); 1977; 587-9)



279 Per capita availability of tea and coffee

Per capita availability of tea improved from 446 g in 1975-76 to 461 g in 1976-77 and of coffee from 62 g to 72 g.

The per capita availability of sugar was 6.1 kg both in 1975-76 and 1976-77. (Data India. 15; 1978; 229)

280 Imports of copra, coconut oil and tallow into India

	October 1976-77	September 1977-78
Copra (tonnes)	3,900	4,000
Coconut oil (tonnes)	1,600	10,000
Tallow (tonnes)	39,000	40,000

(Oils and Oilseeds Journal. 30(4); 1978; 29, 35)

281 Cut in sugar export

Export quotas of sugar importing countries including India, fixed under the Geneva agreement, may be curtailed by 15 p.c. This step is apparently contemplated to maintain international sugarprices at reasonable levels. (Technologist's Digest. February 1978; 27)

282 Industrial production of some food commodities in India  
for the year 1977

Commodity	Units	No. of Units	Installed Capacity	Estimated Production
	Million Tonnes			
Biscuits		31	1,04,448	77,000
Confectionery	"	22	35,928	13,500
Bread	"	17	83,204	83,000
Soft drinks	Million Bottles	34	1,731	460
Malt extract	Million Tonnes	2	4,800	2,000
Breakfast foods				
(a) Pearl barley	"	4	6,590	700
(b) Corn flakes	"	3	2,550	250
(c) Oat flakes	"	Nil	Nil	Nil
Guar gum	"	8	41,500	26,500
Weaning foods and high protein foods	"	6	8,951	7,250
Starch	"	9	1,68,600	1,20,000
Liquid glucose	"	7	80,000	28,000
Dextrose	"	2	30,600	12,500
Anhydrous dextrose	"	2	2,000	1,000
Enzymes	"	1	7,300	574
Drinking chocolate	"	3	1,500	25
Chocolates	"	5	4,410	1,950
Cocoa powder	"	3	642	15
Beer	K <sup>"</sup> Lit.	28	1,19,242	86,000

(Eastern Economist. 70(19); 1978; 959)



Name	Capacity installed	Produc- tion 1977	Current selling prices Rs./tonne
1. B.H.C.	28900	26800	3800-4000
2. D.D.T.	4200	4500	11,000/-
3. Lindane	30	5	1,20,000/- 25,000/-
4. Methyl parathion } Metasystox } Fenitrothion }	2550	2080	55,000/- 66,800/-
5. Malathion	2500	2000	25,000/-
6. Dimethoate	1000	500	71,000/-
7. Phosphamidon	636	300	-
8. D.D.V.P.	276	150	64,000/-
9. Monocrotophos/Birlane	-	-	1,02,000/- CIF
10. Phorate	-	-	33,000/- CIF
11. Carbaryl	-	300	32,000/- CIF
12. Formothion/Thiometon	-	-	54,000/- CIF
13. Phosalone	-	-	47,500/- CIF
14. Endosulfan	300	440	44,000/-
15. Quinalphos	200	200	3,00,000/-
16. Diazinon	-	-	45,000/- CIF
17. Penthoate	600	25	70,000/-
18. Aldrin/Chlordane/ Heptachlor	-	-	Aldrin 30,000/- CIF
19. Carbofuran	-	-	90,000/- CIF
20. Trichlorofon, Borsban, } Hinosan Calixin, Cap- } tofol, Triazines, } Terrecurr etc. }	-	-	Trichlorofon 64,000/- CIF
21. Kelthane/Tetradifon/ } Ethion }	-	-	Dicofol - 34,000/- CIF
22. Copperoxychloride	-	510	21,000/-
23. Organo mercurials	47	80	
24. Zineb/Meneb Dithiocarbamates	2484	1000	Zineb-29,000/- Meneb-34,000/-
25. Nickel-chloride	300	50	16,000/-
26. MBS/Bayistin	-	-	3,00,000/-

27. Carboxin	-	-	80,000/-	CIF
28. Weedicides	3495	250	2,4-D 25,000/-	
29. Rodenticides	550	350	30,000/-	
30. Al. phosphide	880	900	70,000/-	
31. MB/FDB	508	100	35,000/-	
32. Sodium cyanide/ Cal. cyanide	-	-	12,000/-	CIF
TOTAL	50456	29610		

CIF = Cost, Insurance & Freight  
(Pesticides. 12(4); 1978; 16)

284 Imports of Pesticides

Qty: Tonnes  
Value: Rs. Million

Item	1975-76 Quantity Value		Major sources of import
1. B.H.C.	1305.75	9.48	U.K., China Rep., Japan
2. D.D.T.	2451.19	22.90	USSR, Poland
3. Ethylene dichloride	-	-	
4. Other weedicides and weedkilling agents	65.55	2.11	Israel, U.K., U.S.A., Japan
5. Aldrin	93.20	2.61	Italy, Netherlands, U.K., U.S.A.
6. Chlordane	60.03	1.23	Hungary, U.S.A.
7. D.D.V.P.	3.71	0.09	U.S.A.
8. D.D.T. Propo.	4320.42	41.78	Poland, USSR, USA
9. Dieldrin	-	-	Netherlands
10. Endrin	985.46	37.41	Netherlands, USA German (FRP)
11. Heptachlor	164.01	3.06	USA, UK
12. Lindene	1.00	0.06	UK, Japan, France
13. Methyl Bromide	-	-	German, FRP
14. Other pesticide	5868.10	144.81	U.S.A.
TOTAL	15318.42	265.54	

(Pesticides. 12(4); 1978; 17)



285 Consumption of Pesticides (1976)

1. B.H.C.*	24252 tonnes
2. D.D.T.*	9980 "
3. Aldrin/Chlordane/Heptachlor	317 "
4. Copperoxychloride	465 "
5. Malathion	1732 "
6. M. Parathion/M. Systox/Fenitrothion	1279 "
7. Quinalphos	192 "
8. Dimethoate	352 "
9. Phosphamidon/DDVP	347 "
10. Zineb/Maneb	578 "
11. Thiram/Ziram	68 "
12. Organo-mercurials	54 "
13. Nickel chloride	30 "
14. Zinc phosphide	207 "
15. MB/EDB	60 "
16. 2,4-D	202 "
17. Other weedicides	96 "
18. Endrin	986 "
19. Pesticides (others)	17353 "
TOTAL	58540 "

\*Including public health

(Pesticides. 12(4); 1978; 17)

(Quantity in M.T. Technical Grade)

Pesticides	1978-79	1982-83
<u>Insecticides:</u>		
BHC	28,000	33,000
DDT	5,400	5,600
Malathion	2,800	3,500
Methylodemeton		
Parathion	1,700	2,000
Fenitrothion		
Dimethoate	850	1,000
Endosulfan	1,200	1,600
Carbaryl	6,500	7,500
Phosphamidou	650	650
DDVP	280	300
Monocrotophos		
Chlorfenvinphos	450	660
Quinalphos	500	1,000
Diazinon	30	40
Phorate	315	360
Chlordane		
Heptachlor	900	1,000
Aldrin		
Phosalone	260	400
Thiometon		
Formethion	290	340
Phenthoate	300	600
Carbofuran	200	250
Nicotinic sulphate	80	100
Trichlorofen	7	10
Sodium Cyanide/Calcium Cyanide	100	155
Metaldehyde	6	10
Dursban	18	25
<u>Acarcides</u>		
(Dicofol Tetradifon & Ethion)	100	150
<u>Fungicides</u>		
Streptocycline/Agricmycine	0.6	1
Aurofungin/Kerathane		
Dithiocarbamates		
Ziram, Thiram	2,700	3,000
Zineb, Mancozeb		
Copper oxychloride	700	750
Organomercurials	13	15
Sulphur (Wettable & Dusting)	4,500	5,000
Hinosan	80	90
Nickel chloride	80	100
Carboxin	20	50
Benamyl	20	50
Carbondazinn	40	100



Calixin		
PCNB	15	50
Capetfol	100	150
Copper sulphate	30	100
	4,400	5,000
<u>Rodenticides</u>		
Zinc phosphide	650	750
Coumaryl Warfarin		
<u>Plant growth regulators</u>		
CCG, NAA Ethopon		
Maleic hydrazide	60	100
Libberallic		
<u>Fumigants</u>		
EDB		
M.Br.	125	200
EDCT		
All phosphide	125	200

(Pesticides. 12(4); 1978; 22)

#### 287 Science outlay

The outlay on science and technology in the budget estimates for 78-79 has been increased from Rs.179 Crores in 77-78 to Rs.220 crores, an increase of 23 per cent. (Indian Engineering News Record. 34(22; 1978; 7)

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#### 288 Blanket Exchange permits to exporters

The Reserve Bank has decided to revise the guidelines stipulated in the earlier press note on the subject dated August 30, 1971 and has clarified for the information and guidance of the public that the Blanket Permit facility will henceforth not be available, inter-alia, in the following cases:

- (i) Where the exporter has an unsatisfactory record in respect to compliance with the foreign exchange regulations.
- (ii) Where any adjudication proceedings have been initiated under the Foreign Exchange Regulation Act by issue of Show Cause Notice(s) or prosecution proceedings have been started in a court of law under the Foreign Exchange Regulation Act, the Blanket Permit facility will remain suspended till the adjudication of the case by an officer of the Enforcement Directorate or pronouncement of judgement by the court, as the case may be.
- (iii) Where the violation of the Foreign Regulation Act has been established and has resulted in imposition of penalty by an officer of the Enforcement Directorate or in conviction by a court, as the case may be, the Blanket Permit facility shall be restored after a lapse of two years from the date of adjudication order or judgement, as the case may be.
- (iv) Where the Central Enforcement Agencies bring to the notice of the Reserve Bank of India, in their judgement, there is a strong prima-facie case, which would justify the suspension of withdrawal of the Blanket Permit facility, the facility may be denied. Such denial of facility will initially be restricted to one year from the date of such denial and the grant of Blanket Permit facility will be reviewed every six months.
- (v) Where the Reserve Bank of India is, for adequate reasons, of the opinion that the Blanket Permit facility, if allowed, is likely to be misused.

(Economic and Commercial News. 8(27); 1978; 5-6)

289 FDA's restriction on packaging material

FDA Commissioner says that the mere presence in a packaging material of a substance that can make rats sick is sufficient to ban it from food applications even if no migration

from the package into the food can be detected. This interpretation of the Delancy Clause is so broad as to make almost all packaging materials subject to possible ban since they all are likely to contain some minute quantity of toxic substance. (Newsletter, Food, Nutrition & Health. 1(9); 1977; 4)

290 Units barred from foreign tie-ups listed

A comprehensive list of industries in which foreign collaboration will not be 'normally' permitted has been drawn up by the Central Government. The list, containing a host of industries grouped under 31 separate subheads, is a kind of a prospective guide to all foreign companies. It does not affect existing foreign collaborations. Besides others, this includes fermentation industries; food processing industries; vegetable oils and vanaspati. (Data India. 19; 1978; 295-6)

291 Bread making quality guide

In their marketing guide for bread-making wheat, the Home-Grown Cereals Authority state that under normal conditions, to be accepted for bread making, wheat should fulfil the following requirements: (a) be of good colour, free from objectionable smell, pest infestation, ergot and other injurious materials; (b) not have been overheated during drying or storage; (c) have a moisture content of 16 per cent or less; and (d) contain not more than 2.5 per cent of impurities. (Milling Feed & Fertilizer. 160(9); 1977; 9) .

292 Detection of rodent contamination

The Black Ray<sup>(R)</sup> Sanitation Inspection Lamp ML-49, produced by Ultra-Violet Products Inc., can be used to detect the presence of rodents and food contamination. Many food inspectors and processors use this type of device to detect the rodent contamination. Black light causes fluorescent materials, such as rodent urine and hair, to become easily visible. (Journal of the American Dietetic Association. 70(5); 1977; 545)



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293 Malathion production

The Punjab United Pesticides and Chemicals Ltd., has begun the manufacture of malathion. The project has been launched for the manufacture of 10,000 tonnes per annum of malathion technical. (Industrial Development News. 13(5); 1978; 63)

294 Dry ice plant starts production

The dry ice (solid carbon dioxide) plant in Gujarat set up by the Indian Farmers' Fertilizers Cooperative (IFFCO) at Kalol commenced commercial production. The Rs.7-lakh plant has a capacity to produce six tonnes of dry ice per day.

Dry ice has the special quality of extremely low temperature (minws 78.5°) and has three times the refrigeration capacity of ordinary ice. It evaporates at a very slow rate directly from solid to gaseous form and does not leave any liquid residue. It is widely used as a refrigerant agent for perishable foods like ice-cream, meat, frozen foods and vegetables. (Industrial Development News. 13(4); 1978; 40)

295 Mushroom project to get university assistance

The Himachal Pradesh University has decided to provide necessary research and technical back-up and conduct extension education courses on mushroom cultivation under "Development of mushroom cultivation in Himachal Pradesh" programme sanctioned by the UNDP. The University will also supply quality spawn to the farmers. The project has been initially sanctioned for two years. It envisages an outlay of Rs.60 lakhs, out of which Rs.24-lakhs will be provided by the United Nations in the form of equipment and technical expertise.

The State Horticulture Produce Marketing Corporation will prepare bulk pasteurized compost under the guidance of the UNDP expert. This will be supplied to the farmers in sealed polythene bags. The Corporation will also arrange the collection and marketing of fresh mushrooms. (University News. 16(11); 1978; 966)

296 IDA aid for Jammu & Kashmir State project

The International Development Association (IDA), an affiliate of the World Bank, has decided to provide a credit of \$14 million for a project to improve production and marketing of apples and walnuts and establish a research component for mushroom development in the State. The annual production of apples in the State is worth about \$60 million. Walnut production is estimated at 23,000 tonnes a year and there are about 500 farmers producing 95 tonnes of mushrooms per year, mostly for canning. (Data India. 22; 1978; 350)

297 Cash crop corporation planned in Meghalaya

A cash crop development corporation is being set up in the State. Rs.1.77-million has been allotted for the corporation which will grow rubber, coffee and black pepper. It will cultivate pineapples, oranges, sugarcane, ginger, oilseeds, jute, mesta, cotton and other cash crops. (Data India. 23; 1978; 360)

298 Incentive to small-scale sector

The new policy safeguards the interests of the small-scale, tiny and cottage sectors. Items reserved for these sectors will generally be banned for import. The prices charged for material supplied to these sectors by the channelling agencies will in future be less and equal to those payable by the large users on high sea sales. The import requirements of these sectors will be available wholly in free foreign exchange and local committees set up at licensing offices will decide applications for capital goods upto Rs.1 million.

Entrepreneurs setting up small-scale units will be entitled to get import licences upto Rs.300,000. New units set in backward areas by members of the scheduled castes and tribes or by those who are technically qualified can get licences for imports upto Rs.500,000. (Data India. 14; 1978; 209)

299 Panel to protect small marine exporters

A government-appointed committee has suggested in its report various regulatory measures to safeguard the interests of the small-scale marine exporters against the subsidiaries of five multi-nationals and 13 large industrial houses who are engaged in this business. The Commerce Ministry is examining the report in consultation with the Agriculture Ministry which is looking after the issue of licensing of marine products. The committee felt that the operation of export houses and merchant exporters have the distinct adverse effect on the availability of raw material at reasonable prices to the small scale operators. These houses are in a position to offer higher prices, as they have no direct investment and stake in the seafood industry. These export houses derived direct and indirect benefits of import entitlements and got the premium on such entitlements alongwith other groups of commodities such as engineering goods and chemicals. (Data India. 21; 1978; 327)

300 Incentives for border districts in Punjab

The government will give 15% capital subsidy in order to encourage industries in the border districts of Ferozpur, Amritsar and Gurdaspur. Accordingly 7% of the annual turnover will be given as interest-free loan, repayable in seven years. (Data India. 12; 1978; 192)

301 Licences issued to industrial set up

M/s General Foods Pvt Ltd., Indore, M.P. for production of cotton seed oil/minor oilseed oils - 30,000 tonnes in terms of seed. (New Unit) (Industrial Development News. 13(3); 1978; 30)



M/s Papain Laboratories International, Baroda, for production of papain BPC - 35 tonnes. (New Unit) (Industrial Development News. 13(4); 1978; 47)

M/s Shelkari Sahakari Sakhar Karkana Ltd., Sangli, Maharashtra for production of Indian made foreign liquors and country liquors - 5033 kilo litres. (Carry On Business) (Eastern Economist. 70(19); 1978.

Paschimi Rajasthan Dugdh Utpadak Sahakari Sangh Ltd., Jodhpur, Rajasthan, for production of (a) table butter 1,500 tonnes, (b) ghee 75 tonnes, (c) casein 75 tonnes, (d) skimmed milk powder/whole milk powder 2700 tonnes and (e) infant milk food 750 tonnes. (New Undertaking) (Economic Times. 18(139); July 23, 1978; 7)

M/s The Andhra Dairy Development Corporation Ltd., Lalapet, Hyderabad (Cuddaph-AP) for production of (a) skimmed/whole milk powder 2,500 tonnes, (b) infant and weaning foods 1,500 tonnes, (c) malted milk food 1,200 tonnes, (d) condensed milk (sweetened) 1,200 tonnes, (e) table butter 1,500 tonnes and (f) ghee 1,000 tonnes. (New Unit) (Eastern Economist. 70(19); 1978; 952)

302 Science centre for 3rd World to be set up in India

Centre to promote co-operation among the non-aligned and other developing countries in the field of science and technology will be set up in India. This was recommended by the co-ordinating committee for scientific and technological co-operation among the non-aligned nations which held a three-day meeting from June 22.

The meeting, attended by representatives from Algeria, India, Peru, Somalia and Yugoslavia was chaired by Dr. A. Ramachandran, Secretary, Department of Science and Technology.

The meeting of the co-ordinating countries decided that inter-governmental working group on appropriate technology consisting of representatives of about 30 to 40 countries should meet in India early in 1979.

The co-ordinating countries also discussed various measures for promoting scientific and technological co-operation among the non-aligned and other developing countries. Joint research projects, sharing of experiences in the development of national scientific and technological policies and in transfer of technology, development of a system of scientific and technical information and documentation and the promotion of public undertaking of science and technology were considered priority areas for action. (Financial Express. 18(137); 1978; 3)

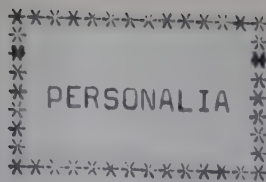
303 India to host International Meet on Technology

India will host an international conference on the development and application of appropriate technology in November this year. The conference to be held under the auspices of the United Nations Industrial Development Organization will be attended by nearly 35 countries including developing and a few developed countries.

The ten-day meeting aims to promote greater international cooperation and allocation of resources for the stimulation of research and development in the developing and industrialised countries, both at the enterprise and institutional levels. The meeting will determine critical industrial sectors in developing countries and consider specific alternative technologies in certain technological development specially in semi-urban and rural communities in the developing countries.

Appropriate policy measures, which may need to be adopted to ensure effective development and application of processes and techniques will also be considered.

The conference will be divided into two parts. The first part of the meeting will be held at New Delhi from November 20 to 25, 1978 and will be attended by officials, academicians and institutional representatives. The second part of the conference will be held in Gujarat at the level of Ministers of participating developed and developing countries. (Economic & Commercial News. 8(21); 1978; 4)



304 FAO representation in India

As a result of the decision taken by the Sixty-ninth Session of the FAO Council, in July 1976, to create a network of FAO Representatives in its member countries an agreement was concluded with the Government of India for the establishment of FAO Representation in New Delhi.

With concurrence of the Government of India and pending the appointment of the FAO representative, Dr. J.G. Rumeau has been appointed as Officer-in-Charge for an initial period of four months.

The office of the FAO Representative in India is located at 55, Lodi Estate, New Delhi, where it shares the premises with UNDP and other UN Agencies. (UN Weekly Newsletter. 29(22); 1978; 1)

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